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'I've Had Unsafe Sex So Many Times Why Bother Being Safe Now?': The Role of Cognitions in Sexual Risk Among American Indian/Alaska Native Men Who Have Sex with Men

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Abstract

Background—American Indian/Alaska Native (AI/AN) men who have sex with men (MSM) are at high risk of human immunodeficiency virus (HIV) acquisition and transmission.

Purpose—This study aimed to investigate a potential area of focus for HIV prevention interventions by assessing the impact of sexual risk cognitions on sexual risk-taking among AI/AN MSM.

Methods—AI/AN MSM ($N=173$) from a national cross-sectional survey were analyzed.

Results—Reporting more frequent sexual risk cognitions overall (high sexual risk cognitions) was associated with multiple HIV risk factors including unprotected anal intercourse and serodiscordant unprotected anal intercourse. Participants with high sexual risk cognitions had a 2.3 (95% Confidence Interval: 1.1, 4.7) times greater odds of engaging in unprotected anal intercourse regardless of childhood sexual abuse, depression, and alcohol dependence. Most individual sexual risk cognitions were associated with unprotected anal intercourse, serodiscordant unprotected anal intercourse, or both.

Conclusions—Results suggest that sexual risk cognitions may be a productive area for further work on HIV prevention among AI/AN MSM.

Keywords

MSM; American Indian; Alaska native; HIV/AIDS; Sexual risk cognitions

HIV/AIDS continues to be a major public health concern in the USA, particularly among men who have sex with men (MSM) and ethnic minorities. By the end of 2006, there were an estimated 1.1 million people in the USA living with HIV/AIDS, the majority (66%) of whom were people of color [1]. Over half (57%) were MSM [2]. While American Indian/Alaska Natives (AI/ANs) account for slightly less than 1% (4,600) of those living with HIV/AIDS, they have the second highest transmission rates of chlamydia and gonorrhea and the third highest rate of HIV transmission [1–3]. HIV prevalence in MSM in the USA is estimated at 19% [4]. Multiple studies have shown an HIV prevalence ranging from 18% to 34% in urban AI/AN MSM, rivaling prevalence rates for MSM in sub-Saharan African countries (12–44%) and in the African-American community (28%) [4–7]. This high prevalence has been partially attributed to a substantial amount of sexual risk-taking among AI/AN MSM [5].

Additionally, AI/AN MSM, as a part of the larger AI/AN community, have been disproportionately affected by many social and behavioral factors that contribute to disparities in their health outcomes compared to non-AI/ANs, which place them at greater risk for HIV. AI/ANs, compared to persons of other races or ethnicities, are younger (33% under 18 years of age vs. 26% for the general population), have the highest rates of illicit drug use (13% vs. 3% for Asians, 8% for Hispanics, 8% for Whites, 9% for Native Hawaiians or other Pacific Islanders, 10% for Blacks, and 12% for persons reporting two or more races) and binge drinking (33% vs. 13% for Asians, 20% for Blacks, 21% for persons reporting two or more races, 23% for Whites, 24% for Hispanics, and 26% for Native Hawaiians or Other Pacific Islanders), report lower high school graduation rates (71% vs. 80% for the general population), are less likely to have health insurance coverage (73% vs. 78% of Blacks, 79% of Asians and Pacific Islanders, and 88% of Whites), and are more likely to live below the poverty level (33% vs. 13% in the general population) [8, 9]. Addressing the growing sexually transmitted infection and HIV rates among AI/AN is further complicated by the complex social and sexual networks within the AI/AN community; the varying cultural beliefs regarding sexual activity, health, and help seeking; the availability of appropriate treatment; partner management strategies; and the lack of health care coordination among tribal, state, and federal programs [3].

Increased sexual risk-taking among MSM in general is associated with a variety of personality, mood, and situational characteristics, such as being in a non-committed relationship [10, 11], a history of childhood sexual abuse [12–14], substance use [15, 16], low self-esteem [17], and negative mood states (including depression, anxiety, and post-traumatic stress) [18–20]. The limited research on factors contributing to increased sexual risk in the AI/AN population suggests that substance use, having a steady partner (i.e., AI/AN appear less likely to use protection with a steady partner), and having a history of victimization all are associated with sexual risk-taking [21–23].

There has been limited research on the role that cognitions (i.e., thoughts, attitudes, and beliefs), specifically sexual risk cognitions, play in the decision to engage in unprotected sex. Sexual risk cognitions are conceptualized as risk-escalating thoughts that occur in the heat of the moment of potential sexual risk-taking [24]. Gold and colleagues found that the majority of MSM who engage in risky sexual behavior do so despite knowing the potential risk [25–29]. Further, they found that during risky behavior, these men engaged in a heat-of-the-moment “internal dialogue” or “self-talk” of justifications for their actions. Cognitive interventions are grounded in the idea that this internal dialogue drives behavior and, therefore, is a useful target [30]. Two HIV prevention interventions using Gold’s cognitive theory, specifically targeting these heat-of-the-moment self-justifications, have been successful at decreasing unprotected anal sex among MSM [31–33]. Additionally, other recent cognitive-behavioral interventions in MSM have shown success in reducing sexual

risk [34, 35], although without dismantling studies we cannot be certain what role the cognitive component played in their success. Unfortunately, no cognitive interventions have been tested among AI/AN MSM.

In the present study, we used data from the HONOR Project, a national study of gay, lesbian, bisexual, and transgender AI/ANs, to investigate the role sexual risk cognitions play in the decision to engage in sexual risk-taking among AI/AN MSM. Specifically, we sought to (1) identify sociodemographic, mental health, childhood abuse, and sexual risk characteristics associated with sexual risk cognitions; (2) assess whether sexual risk cognitions are independently associated with sexual risk-taking; and (3) assess which individual sexual risk cognitions are most related to sexual risk-taking. No prior research was available to guide specific hypotheses in this area. However, we expected that in our sample of AI/AN MSM, sexual risk cognitions—particularly the culturally specific sexual risk cognitions—would be associated with sexual risk-taking and help inform potential cognitive HIV prevention interventions geared toward AI/AN MSM.

Methods

Participants

A total of 447 AI/ANs participated in the HONOR project. To participate, individuals needed to (1) self-identify as American Indian, Alaska Native, or First Nations and either be enrolled in their tribal nation or report having at least 25% total American Indian blood; (2) self-identify as gay, lesbian, bisexual, transgender, or have engaged in same-sex sexual behavior in the past 12 months; (3) be 18 years of age or older; (4) speak English; and (5) reside, work, or socialize in one of the urban study sites. The current study is restricted to male participants who had sex with another man in the past 12 months, knew their HIV status, and completed the Sexual Risk Cognitions Questionnaire portion of the survey ($N=173$).

Procedures

This study involved a secondary analysis of data from the HONOR Project. Recruitment and study procedures have been detailed elsewhere [5, 36, 37]. Briefly, the HONOR Project involved a cross-sectional survey focused on testing an “indigenist” stress and coping model and establishing preliminary baseline prevalence rates of trauma, HIV/AIDS, and health outcomes [38]. Participants were recruited from July 2005 to March 2007 from seven major metropolitan areas (Seattle–Tacoma, San Francisco–Oakland, Los Angeles, Denver, Tulsa–Oklahoma City, Minneapolis–St. Paul, and New York) using a combination of targeted, partial network, and respondent-driven sampling techniques designed to maximize coverage of the heterogeneity of the population and to minimize selection bias. At one site, we attempted to enroll all eligible individuals. At all other sites, site coordinators specified six to eight diverse (by gender and age) first wave “seeds” ($n=36$) of which 33 participated. Volunteer participants also were solicited through newsletters, brochures, posters, and word of mouth. A second wave of respondents generated 58 respondent-driven sampling individuals, of whom 50 participated. In addition, 368 of 469 volunteers eventually participated. We achieved a total response rate of 80.1%. There were no significant differences between respondent-driven sampling (seeds and nominees) and volunteer respondents for the cohort overall or by city on key sociodemographic variables (i.e., gender, education, employment, income, or housing) that might reflect regional or sampling differences. Once recruited, participants were asked to complete a 3–4 hour computer-assisted self-interview and were compensated \$65 for their time and effort. This study was approved by the Institutional Review Board of the University of Washington.

Measures

Sexual Risk Cognitions—Using Gold’s list of self-justifications, Shah et al. created the Sexual Risk Cognitions Questionnaire as a way to more succinctly assess the type and frequency of heat-of-the-moment cognitions related to unsafe sex [24]. All participants were given the 22 core items from the Sexual Risk Cognitions Questionnaire-22 [24], as well as an additional 12 items created by the investigators to represent fatalistic (e.g., “Gay people are destined to get HIV”) and AI/AN-specific (e.g., “Native Americans don’t get HIV”) cognitions. Two of these additional items were worded slightly differently depending on the participant’s HIV serostatus: (1) “I figured I would acquire HIV at some point in my life, so there has been no reason to regularly use condoms” for HIV-seropositive participants versus “I’m going to get HIV someday anyway, so why not just get it over with” for HIV-seronegative participants and (2) “Having HIV allows me to have any kind of sex I want to” for HIV-seropositive participants versus “I’d rather have HIV and be able to have any kind of sex I want to” for HIV-seronegative participants. Each item was preceded by the statement “During sexual encounters, when I have been tempted to not use or have not used protection such as a condom or a dental dam, I have thought...,” and participants were then asked to indicate how often they had each of the 34 cognitions on a five-point scale: 1 (*never*), 2 (*very occasionally*), 3 (*occasionally*), 4 (*frequently*), and 5 (*very frequently*). With the present sample, the Cronbach’s alpha for the Sexual Risk Cognitions Questionnaire-22 was 0.93 and for the full 34 items was 0.94, as compared to the published alpha of 0.91 for the Sexual Risk Cognitions Questionnaire-22 [24].

For the analyses associated with the first and second aims, dichotomized mean scores (low sexual risk cognitions [mean≤2] versus high sexual risk cognitions [mean=3–5]) were used due to substantial skewness, a clear cutoff at a mean of 2, and to render them easily interpretable in terms frequency (e.g., using the item response scale, high sexual risk cognitions indicates on average *occasionally*, *frequently*, or *very frequently* engaging in risky sexual cognitions). Similarly, for the analysis associated with the third aim, endorsement of a specific sexual risk cognition was defined as *occasionally*, *frequently*, or *very frequently* engaging in that particular sexual risk cognition.

Sociodemographic and Serostatus Characteristics—Sociodemographic characteristics were assessed with standard formats and coded as follows: education (< high school graduation/GED, ≥ high school graduation/GED); age (<40 years old, ≥40 years old), housing status (marginally housed, permanently housed), employment (unemployed, part- or full-time employment), income (<\$1,000 per month, ≥\$1,000 per month), and HIV serostatus (seropositive, seronegative). HIV serostatus was established via self-report of the most recent HIV test result.

Mental Health—Post-traumatic stress disorder symptoms were measured using the Posttraumatic Diagnostic Scale [39] which yields a post-traumatic stress disorder diagnosis in accordance with the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition. The scale captures 17 symptoms in the past month and includes symptoms of re-experiencing, avoidance, and arousal. Participants were considered to be diagnosable with post-traumatic stress disorder if they met diagnostic criteria according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (yes/no). Participants were considered to have experienced post-traumatic stress disorder symptoms if they reported having one or more post-traumatic stress disorder symptoms in the past month related to a traumatic event but did not meet diagnostic criteria (yes/no). Depression was measured using the Centers for Epidemiological Studies Depression Short Scale [40, 41], a non-diagnostic screening measure for examining the prevalence of nonspecific psychological distress in community samples. On this ten-item scale, possible scores range from 0 to 30

with a score of 10 or greater indicating depressive symptoms. In this sample, the Cronbach's alpha was 0.88. Current Alcohol Dependence was assessed using the Mini-International Neuropsychiatric Interview (Mini screen 5.0.0/English version/DSM-IV, 11/1/03). Dependence was defined as the presence of at least three of the seven diagnostic criteria in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (yes/no). Self-esteem was assessed using the Rosenberg Self-Esteem Scale [42]. Possible scores range from 0 to 30 with a score below 15 indicating low self-esteem. With the present sample, the Cronbach's alpha was 0.84.

Childhood Abuse—A history of childhood abuse was assessed with the Childhood Trauma Questionnaire, a 28-item self-report inventory that provides brief, reliable, and valid screening for histories of abuse and neglect [43]. It inquires about five types of maltreatment—emotional, physical, and sexual abuse as well as emotional and physical neglect. Participants are asked to respond to each item on a six-point scale from *never true* to *very often true*. Each subscale score ranges from 5 (no history of abuse or neglect) to 25 (extreme history of abuse and neglect). For the purposes of this study, we focused on abuse subscales. With the present sample, Cronbach's alpha was 0.93.

Sexual Risk—Having a current primary partner (defined as being in a steady romantic or sexual relationship) was assessed with a single yes/no item. Engagement in the sex trade (defined as the exchange of sex for money, drugs, food, or shelter) was assessed with a single yes/no item. Any sexually transmitted infection (yes/no) was defined by self-reported chlamydia, gonorrhea, herpes, human papillomavirus, or syphilis in the participant's lifetime. Participants were asked about their sexual behaviors in the past 12 months, including anal insertive sex and anal receptive sex with and without condoms with male partners by self-reported partner HIV serostatus (seropositive, seronegative, unknown). Four composite variables were created with this information: any anal intercourse (yes/no), unprotected anal intercourse (yes/no), serodiscordant anal intercourse (yes/no), and serodiscordant unprotected anal intercourse (yes/no) in the past 12 months. As is the convention [44–47], serodiscordant intercourse was defined as intercourse with a partner of discordant or unknown serostatus. Sexual risk-taking was defined in two ways: as having any unprotected anal intercourse or any serodiscordant unprotected anal intercourse in the past 12 months.

Data Analyses

Descriptive statistics (i.e., mean, standard deviation (SD), median, and range) were calculated for the Sexual Risk Cognitions Questionnaire-22, the additional 12 items, and the full 34 items. Pearson's chi-square (χ^2) tests and *t*-tests were used to identify sociodemographic, mental health, childhood abuse, and sexual risk characteristics that differed between participants with low versus high sexual risk cognitions. A two-stage process was used to assess whether sexual risk cognitions were independently associated with sexual risk-taking. First, all mental health and trauma characteristics were evaluated in three sets of bivariate models with sexual risk cognitions, unprotected anal intercourse, and serodiscordant unprotected anal intercourse as outcomes in each set of models. Second, sexual risk cognitions and significantly ($p < 0.05$) associated mental health and trauma characteristics associated with sexual risk cognitions, unprotected anal intercourse, or serodiscordant unprotected anal intercourse in bivariate analyses were then entered into a multivariate logistic regression model to assess independent associations with sexual risk-taking. Demographic variables that were associated with sexual risk-taking were controlled for by entering them into the model as covariates. Finally, a factor analysis was conducted to assess if any of the sexual risk cognitions acted in a similar manner or informed the same construct. As no clear constructs or factors were shown in the factor analysis, indicating the

potential that the items are operating differently from each other, we ran a series of bivariate logistic regressions to establish which individual sexual risk cognitions were associated with sexual risk-taking.

Results

Participants

A total of 235 men (227 men and 8 anatomically male transgender persons) were recruited into the Honor Project. Of these recruits, 12 men identified as heterosexual, being only attracted to women and reporting never having sex with a man, 38 reported not having had sex with a man in the past 12 months, 11 reported not knowing their HIV status, and 1 was missing all items on the Sexual Risk Cognitions Questionnaire, resulting in a total sample size of 173 participants. Participants were on average 39.2 years old ($SD=9.5$). Among the final sample of 173 AI/AN MSM, mean total scores were 59 ($SD=23.9$) for the full 34-item modified questionnaire, 43 ($SD=18.6$) for the Sexual Risk Cognitions Questionnaire-22, and 17 ($SD=8.7$) for the additional 12 items. Median total scores were 52 (range=9–157) for the full 34-item modified questionnaire, 38 (range=0–104) for the Sexual Risk Cognitions Questionnaire-22, and 14 (range=0–58) for the additional 12 items.

As seen in Table 1, 54 (31%) reported on average having high sexual risk cognitions and 119 (69%) reported low sexual risk cognitions. The majority had above a high school education (88%) and were permanently housed (75%). Approximately half the participants were over the age of 40 years (50%), had part-time or full-time employment (50%), and earned over \$1,000 per month (54%). About one third of the participants were HIV-seropositive (34%). It is also noteworthy that 164 (95%) reported having experienced post-traumatic stress disorder symptoms in the past 12 months. Mean total scores for childhood emotional, physical, and sexual abuse were 13 ($SD=6.3$), 11 ($SD=6.4$), and 12 ($SD=7.3$), respectively. Lastly, 67 (39%) of the participants reported having a sexually transmitted infection in their lifetime, 78 (45%) reported engagement in the sex trade, 125 (72%) reported anal intercourse, 85 (49%) reported unprotected anal intercourse, and 35 (20%) reported serodiscordant unprotected anal intercourse in the past 12 months.

Characteristics Associated with Sexual Risk Cognitions

As seen in Table 1, AI/AN MSM with high sexual risk cognitions were more likely to be marginally housed (35% vs. 20%, $\chi^2(1)=4.5$, $p<0.05$), have depression symptoms (74% vs. 45%, $\chi^2(1)=13.0$, $p<0.001$), and meet criteria for alcohol dependence (59% vs. 37%, $\chi^2(1)=6.9$, $p<0.01$). AI/AN MSM with high sexual risk cognitions were also more likely to report a higher amount of emotional (mean (M)=14.2, $SD=6.5$ vs. $M=12.0$, $SD=6.2$, $t=2.1$, $p<0.05$) and sexual ($M=14.3$, $SD=7.8$ vs. $M=10.9$, $SD=6.9$, $t=2.9$, $p<0.01$), but not physical ($M=12.0$, $SD=6.5$ vs. $M=10.9$, $SD=6.3$, $t=1.1$, $p=0.27$), abuse in their childhood. Finally, AI/AN MSM with high sexual risk cognitions were more likely to report any unprotected anal intercourse (65% vs. 42%, $\chi^2(1)=7.7$, $p<0.01$) and any serodiscordant unprotected anal intercourse (32% vs. 15%, $\chi^2(1)=6.2$, $p<0.05$) during the previous 12 months.

Independent Role of Sexual Risk Cognitions in Sexual Risk

In the multivariate analysis (Table 2), AI/AN MSM with high sexual risk cognitions were at 2.2 (95% Confidence Interval [CI]: 1.0, 4.5) times greater odds of engaging in unprotected anal intercourse than those with low sexual risk cognitions independent of childhood sexual abuse history, depression symptoms and alcohol dependence. Further, while only approaching statistical significance, AI/AN MSM with high sexual risk cognitions were at 2.0 (95% CI: 0.9, 4.7) times greater odds of engaging in serodiscordant unprotected anal

intercourse compared to those with low sexual risk cognitions controlling for childhood sexual abuse history, depression symptoms, and alcohol dependence.

Individual Sexual Risk Cognitions Association with Sexual Risk

As seen in Table 3, 15 (44%) of the 34 individual sexual risk cognitions were significantly associated ($p < 0.05$) with any unprotected anal intercourse in the previous 12 months. Of those, 13 (87%) were from the Sexual Risk Cognitions Questionnaire-22 and 2 (13%) were from the additional items. Further, for those sexual risk cognitions that were significantly associated with any unprotected anal intercourse, odds ratios (ORs) ranged from 2.3 (95% CI 1.0, 5.3) to 4.4 (95% CI 2.3, 8.4) for “I enjoy sex more without a condom.”

Serodiscordant unprotected anal intercourse in the previous 12 months was significantly associated with 18 (53%) of the 34 sexual risk cognitions. Of these, 11 (61%) were from the Sexual Risk Cognitions Questionnaire-22 and 7 (39%) were from the additional items. ORs ranged from 1.5 (95% CI 1.2, 7.8) to 6.0 (95% CI 2.3, 16) for “I’m going to get HIV someday anyway, so why not just get it over with”/“I figured I would acquire HIV at some point in my life, so there has been no reason to regularly use protection.” Overall, five sexual risk cognitions were associated with any unprotected anal intercourse though not associated with serodiscordant unprotected anal intercourse, and eight sexual risk cognitions were associated with serodiscordant unprotected anal intercourse though not associated with unprotected anal intercourse. Notably, 17 (50%) of the 34 sexual risk cognitions were endorsed by 25% or more of the population, and 56% of the participants endorsed the cognition “I enjoy sex more without a condom.”

Discussion

The role that cognitions, specifically sexual risk cognitions, play in the decision to engage in unprotected sex has not been well explored and, to our knowledge, has never been assessed among AI/AN MSM. AI/AN MSM who on average endorse frequently engaging in sexual risk cognitions were more likely to be marginally housed and report symptoms of depression, alcohol dependency, having experienced childhood abuse, and engaging in unprotected anal intercourse and serodiscordant unprotected anal intercourse in the previous 12 months. Additionally, AI/AN MSM who endorse frequently engaging in sexual risk cognitions were at increased odds of engaging in unprotected anal intercourse regardless of their sexual abuse history, symptoms of depression, and alcohol dependence. Finally, the majority of the individual sexual risk cognitions in the modified Sexual Risk Cognitions Questionnaire were significantly associated with engaging in unprotected anal intercourse, serodiscordant unprotected anal intercourse, or both, and half of the sexual risk cognitions were endorsed by a quarter or more of the population. Overall, these findings suggest that approximately half of the AI/AN MSM in our sample are engaging in a substantial amount of sexual risk taking and additionally frequently engaging in cognitive rationalizations for their actions. Further, given that a handful of sexual risk cognitions were associated with serodiscordant unprotected anal intercourse but not unprotected anal intercourse, some sexual risk cognitions may be specifically related to serodiscordant partnerships.

To our knowledge, our study is the first US study to use the Sexual Risk Cognitions Questionnaire to assess associations between sexual risk cognitions and sexual risk-taking in MSM. There have only been two other studies based in the UK with primarily white MSM [24, 48]. In the first study, Shah et al. reported mean total scores of 33 (SD= 13.8), 35 (SD=12.5), and 26 (SD=11.9) for participants who *never*, *sometimes*, or *always*, respectively, wore condoms with a regular partner [24]. These mean total scores are lower, although within 1 standard deviation, of the mean total score for our population based only on the Sexual Risk Cognitions Questionnaire-22 items. In the second study, 343 MSM from London reported median total scores at baseline of 12 (range=0–72) and 11 (range=0–55)

for their intervention and control group, respectively [48]. These medians are substantially lower than our population. Given the comparison between our results and these two studies, AI/AN MSM may engage in more sexual risk cognitions than primarily white, British MSM populations.

While these two studies are the only one we found using the Sexual Risk Cognitions Questionnaire among MSM, a study by Beck et al. of 123 London MSM assessed the impact of sexual risk cognitions on sexual risk using Gold's "Self-Justification for Sexual Risk" Questionnaire. In this study, sexual risk cognitions significantly predicted sexual risk above and beyond the influence of depression, anxiety, and a history of non-consensual sex [49]. These results, together among the work of Gold et al. [25–27, 29] among MSM in Australia and Dilley et al. [31–33] among MSM in the USA are consistent in their finding that sexual risk cognitions play a prominent role in sexual risk-taking irrespective of a person's mood or abuse history.

AI/AN MSM in our study reported a myriad of HIV risk factors. While most had a high school education or beyond, stable housing, and part-time or full-time employment—all potential protective factors—the majority also reported mental health issues. In particular, nearly all reported post-traumatic stress disorder symptoms in the past month, while a substantial proportion reported depression symptoms and alcohol dependency, all factors known to increase HIV risk in MSM [15, 16, 18–20]. Common in this population [22, 50], we noted a considerable amount of trauma and victimization, which has been repeatedly connected to HIV risk in MSM [12–14] and particularly in AI/AN MSM [21–23]. These findings further emphasize the vulnerability of this population. Finally, in terms of sexual risk, more than a third reported ever having a sexually transmitted infection, almost half reported engagement in the sex trade in their life, half engaged in unprotected anal intercourse in the past 12 months, and one fifth reported serodiscordant unprotected anal intercourse in the previous 12 months, overall indicating a significant amount of sexual risk. These risk factors in conjunction with the high HIV prevalence and tendency for AI/AN MSM to find sexual partners within the AI/AN MSM population [5] further emphasize the need for HIV prevention interventions within this population.

There are several limitations of this study. First, the use of self-reported risk behaviors may be prone to social desirability and recall bias. As it is likely that social desirability bias would lead to the underreporting of risk behaviors, our findings are likely to be conservative estimates. Additionally, our use of computer-assisted self-interview may have diminished underreporting of sensitive and stigmatized information [51–54]. To further decrease recall bias, participants were asked to recall details about sex partners and risk behaviors during the past 12 months rather than a longer period of time. Second, we have no way of establishing whether endorsement of a particular sexual risk cognition was truly an indication that the participant had that thought concurrently with engagement in a risky behavior or had it as a post hoc justification. While this is the case, participants were specifically prompted before each sexual risk cognition to think of a time when they engaged in risky behavior or were thinking of engaging in risky behavior and then decide if they had that particular thought during that time, hopefully helping them to recall their heat-of-the-moment cognitions. Third, participants were from urban communities and may differ from AI/AN on reservation or rural setting. Fourth, due to the number of comparisons made in the bivariate analyses, there is an increased likelihood of type I errors. Finally, the cross-sectional nature of the data precludes any causal explanations of the associations among the variables.

In conclusion, we found that the AI/AN MSM in our sample were engaging in a substantial amount of sexual risk-taking and frequently engaging in cognitive rationalizations for their

actions. Further, it appears that a handful of sexual risk cognitions may be associated specifically with serodiscordant unprotected anal intercourse, indicating they may be useful to target in HIV prevention interventions. As AI/AN MSM have been virtually ignored in HIV prevention efforts, more research is clearly needed on potential areas of intervention and factors that contribute to the growing HIV epidemic within this population. Future research should further examine the influence of sexual risk cognitions on sexual risk-taking and the potential for culturally sensitive cognitive interventions for HIV prevention in AI/AN MSM. Specifically, research should assess factors that contribute to an increased amount of sexual risk cognitions, the role sexual risk cognitions may play in the development of sexual risk-taking in AI/AN MSM, which specific cognitions may be useful to target, and how to address them. Overall, we hope that this study and future studies assessing sexual risk cognitions can help inform HIV prevention efforts and ultimately help slow the spread of HIV within this underserved population.

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Table 1

Sociodemographic, mental health, trauma, and sexual risk characteristics among 173 American Indian/Alaskan Native MSM

	Total (N=173) n (%)	High SRC (N=54) n (%)	Low SRC (N=119) n (%)	χ^2
Sociodemographics				
High school/GED or higher education	152 (88)	47 (87)	105 (88)	0.05
<40 years old	86 (50)	23 (43)	63 (53)	1.73
Marginally housed	43 (25)	19 (35)	24 (20)	4.48*
Currently employed (part or full time)	86 (50)	26 (48)	60 (50)	0.08
Household income <\$1,000 per month	76 (46)	30 (56)	46 (41)	3.25
HIV-seropositive	59 (34)	21 (39)	38 (32)	0.80
Mental health				
Experienced PTSD symptoms	164 (95)	51 (95)	113 (95)	0.02
Diagnosable PTSD symptoms	7 (4)	3 (6)	4 (3)	0.46
Depression symptoms (>10 CESD-10)	93 (54)	40 (74)	53 (45)	13.0***
Alcohol dependency (MINI)	75 (44)	31 (59)	44 (37)	6.90**
Low self-esteem (<15 Self-Esteem Scale)	26 (15)	10 (19)	16 (14)	0.75
Childhood trauma (CTQ)				
Emotional abuse (M (SD))	12.7 (6.3)	14.2 (6.5)	12.0 (6.2)	$t = -2.1^*$
Physical abuse (M (SD))	11.2 (6.4)	12.0 (6.5)	10.9 (6.3)	$t = -1.1$
Sexual abuse (M (SD))	12.0 (7.3)	14.3 (7.8)	10.9 (6.9)	$t = -2.9^{**}$
Sexual risk				
Current primary partner	67 (39)	19 (42)	48 (43)	0.00
Any STI (lifetime)	67 (39)	23 (43)	44 (37)	0.49
Sex trade	78 (45)	29 (54)	49 (41)	2.35
Any AI (past 12 months)	125 (72)	41 (76)	84 (71)	0.53
Any UAI (past 12 months)	85 (49)	35 (65)	50 (42)	7.72**
Any serodiscordant AI (past 12 months)	59 (34)	21 (39)	38 (32)	0.80
Any serodiscordant UAI (past 12 months)	35 (20)	17 (32)	18 (15)	6.16*

Test statistics comparing high SRC to low SRC are derived using Pearson χ^2 tests and t tests

High SRC on average occasionally, frequently, or very frequently engaging in risky sexual cognitions, *Low SRC* on average never or very occasionally engaging in risky sexual cognitions, *SD* standard deviation, *PTSD* post-traumatic stress disorder, *CESD-10* Centers for Epidemiological Studies Depression Short Scale, *MINI* Mini-International Neuropsychiatric Interview, *CTQ* Childhood Trauma Questionnaire, *STI* sexually transmitted infection, *AI* anal intercourse, *UAI* unprotected anal intercourse

* $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$

Multivariate analysis of factors associated with unprotected anal intercourse and serodiscordant unprotected anal intercourse in the past 12 months in 173 American Indian/Alaskan Native MSM

Table 2

	UAI (past 12 months)				Serodiscordant UAI (past 12 months)			
	Yes N=85 n (%)	No N=88 n (%)	OR (95% CI)	AOR (95% CI)	Yes N=35 n (%)	No N=138 n (%)	OR (95% CI)	AOR (95% CI)
Sexual abuse (<i>M</i> (SD))	13.3 (7.7)	10.8 (6.7)	1.0 (1.0, 1.1)*	1.0 (0.99, 1.1)	13.3 (7.7)	11.5 (7.1)	1.0 (0.99, 1.1)	1.0 (0.9, 1.1)
Depression symptoms (>10 CESD-10)	50 (59)	43 (49)	1.5 (0.8, 2.8)	1.0 (0.5, 2.1)	24 (69)	69 (50)	2.3 (1.0, 5.0)*	1.8 (0.7, 4.3)
Alcohol dependence (MINI)	42 (50)	33 (38)	1.8 (0.9, 3.3)	1.7 (0.9, 4.5)	18 (53)	57 (41)	1.8 (0.8, 3.8)	1.5 (0.7, 3.5)
High SRC	35 (41)	19 (22)	2.8 (1.4, 5.5)*	2.2 (1.0, 4.5)*	17 (49)	37 (27)	2.9 (1.3, 6.3)*	2.0 (0.9, 4.7)

M and SD are reported for the sexual abuse variable

OR and AOR are controlling for housing status and age

High SRC on average occasionally, frequently, or very frequently engaging in risky sexual cognitions, *UAI* unprotected anal intercourse, *OR* bivariate odds ratio, *AOR* adjusted odds ratio, *CI* confidence interval, *CESD-10* Centers for Epidemiological Studies Depression Short Scale, *MINI* Mini-International Neuropsychiatric Interview

* $p < 0.05$

Table 3

Bivariate logistic regression modeling of specific sexual risk cognitions associated with unprotected anal intercourse and serodiscordant unprotected anal intercourse in the past 12 months in 173 American Indian/Alaskan Native MSM

Sexual risk cognitions	UAI (past 12 months)				Serodiscordant UAI (past 12 months)			
	Total N=173 n (%)	Yes N=85 n (%)	No N=88 n (%)	OR (95% CI)	Yes N=35 n (%)	No N=138 n (%)	OR (95% CI)	
SRCQ-22								
I enjoy sex more without a condom.	97 (56)	62 (75)	35 (40)	4.4 (2.3, 8.4)*	27 (79)	70 (52)	3.6 (1.5, 8.9)*	
I want to show my partner that he's somebody special.	83 (48)	48 (57)	35 (40)	2.0 (1.1, 3.7)*	22 (65)	61 (44)	2.3 (1.1, 5.0)*	
Sex is more exciting without a condom.	82 (47)	50 (61)	32 (37)	2.7 (1.4, 5.0)*	23 (70)	59 (43)	3.0 (1.3, 6.8)*	
I've already had unsafe sex with my partner, what's the point of using a condom this time?	67 (39)	42 (51)	25 (29)	2.6 (1.4, 4.9)*	19 (58)	48 (35)	2.5 (1.1, 5.4)*	
My partner is the same HIV status as me so it doesn't matter.	66 (38)	43 (52)	23 (27)	2.9 (1.5, 5.6)*	18 (53)	48 (36)	2.0 (0.9, 4.4)	
Unsafe sex is just one of life's many risks.	59 (34)	38 (46)	21 (24)	2.6 (1.4, 5.1)*	18 (53)	41 (30)	2.6 (1.2, 5.6)*	
My partner or I will withdraw before ejaculation and this will be safe.	55 (32)	35 (42)	20 (23)	2.4 (1.3, 4.7)*	15 (44)	40 (29)	1.9 (0.9, 4.1)	
My partner will respect me more if we don't use a condom.	53 (31)	31 (37)	22 (25)	1.8 (0.9, 3.4)	13 (39)	40 (29)	1.6 (0.7, 3.5)	
Most of the time I'm careful—it won't matter just this once.	49 (28)	27 (33)	22 (25)	1.4 (0.7, 2.8)	13 (38)	36 (27)	1.7 (0.8, 3.8)	
If I say I want to use a condom my partner may think I have doubts about how safe he has been in the past.	49 (28)	28 (34)	21 (24)	1.6 (0.8, 3.2)	12 (36)	37 (27)	1.5 (0.7, 3.4)	
I think my partner doesn't want to use a condom so we don't.	49 (28)	31 (37)	18 (21)	2.3 (1.2, 4.5)*	14 (41)	35 (26)	2.0 (0.9, 4.4)	
My partner will like me more if we don't use a condom.	47 (27)	31 (37)	16 (18)	2.6 (1.3, 5.3)*	15 (44)	32 (24)	2.6 (1.2, 5.6)*	
My partner or I may lose an erection if a condom is used.	46 (27)	28 (34)	18 (20)	2.0 (1.0, 4.0)*	16 (49)	30 (22)	3.3 (1.5, 7.4)*	
My wishing to use a condom would suggest to my partner that I think she/he may have been having sex with other people.	45 (26)	28 (34)	17 (20)	2.1 (1.0, 4.2)*	13 (39)	32 (23)	2.1 (0.9, 4.8)	
If I suggest using a condom my partner may think that I have been having sex with other people.	45 (26)	25 (31)	20 (23)	1.5 (0.7, 2.9)	11 (33)	34 (25)	1.5 (0.7, 3.4)	
I've had unsafe sex so many times why bother being safe now?	43 (25)	29 (35)	14 (16)	2.8 (1.4, 5.9)*	16 (49)	27 (20)	3.9 (1.7, 8.6)*	
I feel pressured by my partner not to use a condom.	43 (25)	26 (31)	17 (19)	1.9 (0.9, 3.9)	12 (36)	31 (23)	2.0 (0.9, 4.5)	
My partner may reject me if I suggest using a condom.	41 (23)	28 (33)	13 (15)	2.8 (1.4, 6.0)*	14 (41)	27 (20)	2.9 (1.3, 6.4)*	
We get so far sometimes that it's not worth using a condom.	38 (22)	23 (28)	15 (17)	1.9 (0.9, 3.9)	13 (39)	25 (18)	2.9 (1.3, 6.6)*	
If I suggest using a condom my partner will suspect that I have been unsafe.	37 (21)	20 (24)	17 (19)	1.3 (0.6, 2.8)	9 (27)	28 (20)	1.5 (0.6, 3.5)	
My partner may get upset if I suggest using a condom.	34 (20)	19 (23)	15 (17)	1.4 (0.7, 3.1)	9 (27)	25 (18)	1.7 (0.7, 4.0)	

Sexual risk cognitions	UAI (past 12 months)			Serodiscordant UAI (past 12 months)		
	Total N=173 n (%)	Yes N=85 n (%)	No N=88 n (%)	Yes N=35 n (%)	No N=138 n (%)	OR (95% CI)
I have very little to look forward to in life, so there is no point in practicing safer sex.	24 (14)	13 (16)	11 (13)	9 (27)	15 (11)	1.5 (1.2, 7.8)*
Additional 12 items						
I don't want to think about HIV.	50 (29)	27 (32)	23 (26)	11 (31)	39 (29)	1.1 (0.5, 2.5)
Gay people are destined to get HIV.	38 (22)	21 (25)	17 (20)	9 (26)	29 (21)	1.3 (0.5, 3.0)
If I get HIV or since I have HIV, my traditional medicine will help me.	29 (17)	19 (23)	10 (12)	10 (29)	19 (14)	2.6 (1.1, 6.2)*
It's not a big deal anymore to get HIV.	29 (17)	16 (19)	13 (15)	10 (29)	19 (14)	2.6 (1.1, 6.2)*
As a Native American, there are more important things to worry about than HIV.	27 (16)	11 (14)	6 (7)	6 (18)	21 (15)	1.2 (0.4, 3.2)
There aren't condoms available where I live (e.g., on the reservation or in my community).	26 (15)	15 (18)	11 (13)	9 (27)	17 (13)	2.5 (1.0, 6.3)*
Negative: I'm going to get HIV someday anyway, so why not just get it over with; Positive: I figured I would acquire HIV at some point in my life, so there has been no reason to regularly use protection.	21 (12)	14 (17)	7 (8)	11 (32)	10 (7)	6.0 (2.3, 16)*
Native Americans don't get HIV.	19 (11)	11 (13)	8 (9)	5 (14)	14 (10)	1.5 (0.5, 4.3)
Seronegative: I'd rather have HIV and be able to have any kind of sex I want to; Seropositive: Having HIV allows me to have any kind of sex I want to.	19 (11)	10 (12)	9 (10)	8 (24)	11 (8)	3.6 (1.3, 10)*
Only "gay" people use condoms, and I'm not "gay" so it's OK to have sex without a condom.	17 (10)	11 (14)	6 (7)	5 (15)	12 (9)	1.8 (0.6, 5.6)
Native Americans aren't "gay" so they don't need to worry about getting HIV.	16 (9)	10 (12)	6 (7)	7 (21)	9 (7)	3.7 (1.3, 11)*
It's OK to not use condoms anymore since the HIV medications ("the cocktail") will save me.	12 (7)	9 (11)	3 (4)	6 (18)	6 (4)	4.8 (1.4, 16)*

SRCQ-22 Sexual Risk Cognitions Questionnaire—Core 22 Items, Additional 12 Items 12 additional investigator added items, UAI unprotected anal intercourse, OR odds ratio, CI confidence interval, SD standard deviation

* $p < 0.05$